

AD A 1 1 7 2 3 7

12

ANNOTATED BIBLIOGRAPHY OF REPORTS

SUPPLEMENT NO. 12

1 October 1979 - 30 September 1980



DTIC FILE COPY

NAVAL AEROSPACE MEDICAL RESEARCH LABORATORY
NAVAL AIR STATION
PENSACOLA, FLORIDA 32508

DTIC
SELECT
JUL 21 1982
E

September 1980

Approved for public release; distribution unlimited.

82 07 21 07 1

Approved for public release; distribution unlimited.

ANNOTATED BIBLIOGRAPHY OF REPORTS

SUPPLEMENT NO. 12

1 October 1979 - 30 September 1980

Reviewed by

Ashton Graybiel, M.D.
Chief Scientific Advisor

Approved and Released by

Captain W. M. Houk, MC, USN
Commanding Officer

30 September 1980

Naval Aerospace Medical Research Laboratory
Naval Air Station
Pensacola, Florida 32508

FOREWORD

Documents published at the Naval Aerospace Medical Research Laboratory (NAMRL) since 1 October 1979 are included in this twelfth annual supplement to the annotated bibliography of reports dated 30 June 1968.

With the exception of one CONFIDENTIAL report (Special Report 79-5), all numbered reports have been approved for public release; distribution is unlimited. Requests for copies should be directed to the National Technical Information Service (NTIS), Springfield, Virginia 22151. Requests for reprints of open literature documents should be addressed to the author.

Jewell C. Judson

Accession For	
NTIS GRA&I	<input checked="" type="checkbox"/>
DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	
By	
Distribution/	
Availability Codes	
Dist	Avail and/or Special
A	



TABLE OF CONTENTS

Naval Medical Research
and Development Command

<u>Work Unit</u>	<u>Title of Task</u>	<u>Page</u>
MR041.01.02.0005	Investigation of brainstem auditory evoked responses as a new measure of sensorineural performance of naval aviation personnel	1
ZF51.524.023-2008	Exploratory assessment of automated hearing test system for use in Navy hearing conservation programs	1
MF58.524.015-0037	Behavioral characteristics of monkeys and rats irradiated with microwaves	2
MF58.524.015-0034	Neuroendocrine effect of pulsed microwave radiation	3
MR0000101-7029	Exploration of the relations between eye color, selected physiological measures and individual noise susceptibility	3
MF58.524.005-7032	Reduction of airsickness incidence in naval aircraft personnel	4, 5
MF58.524.004-9022	Sensory interactions affecting human performance in naval motion environments	5
NMRDC ZF 51.524.004.2011	Visual acquisition functions in operational environments	6
MR041.01.03-0156	Basic approaches to equilibration assessment in operational settings	7
Special Reports		8 - 11
Monographs		12
Open literature publications by staff members		13 - 14
Author index		15

WORK UNIT

MR041.01.02.0005
NAMRL-1262
(AD A079908)

Normative Bilateral Brainstem Evoked
Response Data for a Naval Aviation
Student Population: Group Statistics

August 1979

W. Carroll Hixson and James D. Mosko

Abstract: Brainstem auditory evoked response data based upon simultaneous ipsilateral and contralateral recordings have been collected and analysed for a selected population (age 20 to 24 years) of naval aviation students. An extensive set of statistical tables is provided for both forms of recordings which establishes the normative range of brainstem responses for this population, using acoustic click stimuli with a 21-Hz repetition rate and peak levels 40, 60, and 80 dB above sensory threshold. These tables include latency, transmission time, half-period, and peak-to-peak amplitude measurements for brainstem Waves I through VI. The latency and transmission time data are based upon individual measures of both the negative and positive peaks of the individual brainstem waves. Timing and amplitude differences observed between the ipsilateral and contralateral brainstem recordings for certain of the waves are described in detail. A set of correlation matrices is included to describe the relationships that exist among both the brainstem waves and the brainstem measurement parameters.

ZF51.524.023-2008
NAMRL-1263
(AD A079909)

Exploratory Assessment of Automated
Hearing Test Systems

October 1979

Ronald M. Robertson, James W. Greene,
Donald W. Maxwell, and Carl E. Williams

Abstract: Past attempts to establish reliable group hearing test procedures have been unsuccessful, as has the present-day application of group self-recording audiometry. Recent occupational health surveys at naval industrial facilities have indicated that a large percentage of the audiograms currently being obtained on group units are invalid. Recently developed microprocessor-controlled audiometers may serve to minimize or eliminate this serious problem.

Laboratory and field assessments conducted on four microprocessor-controlled audiometers (non-group) indicate they: 1) produce hearing threshold levels comparable to those obtained with manual audiometers and within the same time frame; 2) employ programmable

threshold seeking logic, thus ensuring testing consistency at any location; 3) can be programmed to provide fault detection which makes it difficult for individuals to falsify the audiometric data; and 4) provide digitized output information that can be transmitted to a larger computer, either directly or through the generation of onboard data tapes. Subsequent to the exploratory assessment of the four units, tentative performance specifications have been identified for a microprocessor-controlled audiometer for use in Navy hearing conservation programs.

Field testing of a group microprocessor-controlled audiometer is recommended prior to establishing final Navy performance specifications for such an instrument.

MF58.524.015-0037
NAMRL-1264
(AD A080928)

An Experimental Analysis of an Observing- November 1979
Response in Rats Exposed to 1.28 and 5.62
GHz Microwave Irradiation.

John O. de Lorge, and Clayton S. Ezell

Abstract: Naval communications and weapons systems use a variety of microwave producing devices. Frequently fleet personnel may be exposed to the radio-frequency irradiation emanating from such devices. Current scientific reports indicate that biological changes can be produced by nonionizing electromagnetic irradiation and that complex behavioral effects are predominant among these changes.

Few studies of the biological effects of microwave irradiation have investigated complex behavior in non-human organisms. One human behavior easily simulated in other animals is monitoring performance, otherwise known as observing-behavior or performance on a vigilance task. This task requires an animal to respond, thereby producing one or more stimuli. When the stimuli change, the animal has to report the change to obtain a reinforcer. In the present study the effects of two different microwave frequencies (1.28 and 5.62 GHz) on observing behavior in rats were investigated.

At 1.28 GHz the observing-response rate was consistently affected at a power density of 15 mW/cm^2 in all eight rats while at 5.62 GHz the observing-response rate was not consistently affected until the power density approximated 26 mW/cm^2 . Measures of the averaged specific absorption rate (SAR) in a rat model of simulated muscle tissue illustrated a distribution difference at the two different frequencies. The SAR distribution within the

model's head at 1.28 GHz was the inverse of the distribution in the head at 5.62 GHz. It was concluded that the rat's behavior was more easily disrupted at 1.28 GHz than at 5.62 GHz because of the deeper penetration of energy at 1.28 GHz and differences in energy distribution at the two frequencies.

MF58.524.015-0034
NAMRL-1265
(AD A082233)

Implantation and Maintenance of Chronic November 1979
Jugular Venous Catheters in Rhesus Monkeys
(Macaca mulatta)

W. Gregory Lotz, and Timothy P. O'Neill

Abstract: The study of neuroendocrine parameters in rhesus monkeys and other laboratory animals is complicated by the fact that procedures often used to obtain blood samples from the animals cause rapid and pronounced changes in the circulating levels of a number of hormones. Several reports in the open scientific literature indicate that this problem can be greatly reduced or eliminated through the use of chronically indwelling venous catheters. An effort was undertaken to adapt published procedures for such catheters for use in this laboratory.

Procedures have been successfully adapted for the implantation, maintenance, and extended use of chronic indwelling jugular venous catheters in rhesus monkeys. These catheters have been successfully used to draw blood samples from chair-restrained monkeys without any interaction with the animal.

61152N MR0000101-
7029
NAMRL-1266
(AD A084110)

The Relationship Between Selected February 1980
Non-Auditory Measures and the Hearing
Threshold Levels of an Aviation Noise-
Exposed Population

Gerald B. Thomas, Carl E. Williams, and Norman G.
Hoger

Abstract: Individual differences in susceptibility to deleterious noise effects is one of the distinguishing characteristics of noise-related research. In an effort to identify and verify possible contributing variables to the susceptibility question, an examination of the relationship between the hearing threshold levels and selected anatomical, physiological, and behavioral measures of a noise-exposed population was undertaken.

Using data from NAMRL's Thousand Aviator Study, subjects categorized as being of "normal hearing" (n=97) and of "impaired hearing" (n=104) were compared along

several non-auditory dimensions. Results indicated that the two groups differed significantly ($p < .05$) in regard to smoking behavior and eye color. That is, the impaired hearing group had smoked more cigarettes for longer periods of time and tended to have more blue-eyed (i.e., low melanin concentration) individuals than did the normal hearing group. The latter finding is congruent with the speculation that melanin in the stria vascularis (the concentration of which is mirrored by iris pigmentation) serves to protect cochlear function.

Variables which failed to differentiate the two hearing level groups included: blood pressure (systolic and diastolic; sitting and supine), heart rate, serum cholesterol, serum triglycerides, serum lipoproteins, serum uric acid, atherogenic index, presence of arcus senilis, the ten scales of the Guilford-Zimmerman Temperament Survey (emotional stability, restraint, general activity, seriousness, objectivity, social ascendancy, friendliness, thoughtfulness, personal relations, masculinity), social index, alcohol consumption, and somatotype.

MF58.524.005-7032
NAMRL-1267
(AD A088105)

Airsickness During Naval Flight Officer Training: May 1980
Advanced Squadron VT86-AJN

W. Carroll Hixson, Fred E. Guedry, Jr., Garry L. Holtzman, J. Michael Lentz, and Patrick F. O'Connell

Abstract:

This report is the second in a series dealing with a longitudinal study of airsickness in the Basic, Advanced, and Fleet Readiness Squadrons comprising the Naval Flight Officer training program. Flight data from 1,833 hops flown by 134 VT86-AJN students being trained for various weapon operation and navigation duties in attack and antisubmarine warfare aircraft indicate that approximately 55 percent of the students reported being airsick on one or more flights, 28 percent reported vomiting on one or more flights, and 30 percent considered their flight performance to have been degraded by airsickness on one or more hops. Of the total number of hops flown, airsickness, vomiting, and performance degradation were reported to have occurred on 8.6, 3.7, and 3.4 percent, respectively, of the flights. The report details the flight data by hops and by students and also relates the airsickness performance of the student group to performance on a selected battery of motion reactivity tests administered to a large segment of the squadron population prior to beginning flight training.

WORK UNIT

MF58 524.005-7032
NAMRL-1272
(AD A092963)

Airsickness During Naval Flight Officer Training: Advanced Squadron VT86-RIO August 1980

W. Carroll Hixson, Fred E. Guedry, Jr., Garry L. Holtzman, J. Michael Lentz, and Patrick F. O'Connell

Abstract: This report is the third in a series dealing with a longitudinal study of airsickness in the Basic, Advanced, and Fleet Readiness Squadrons comprising the Naval Flight Officer training program. Flight data from 2,048 hops flown by 79 VT86-RIO students being trained for various radar intercept and weapon operation duties in fighter aircraft indicate that approximately 83 percent of the students reported being airsick on one or more flights, 47 percent reported vomiting on one or more flights, and 48 percent considered their flight performance to have been degraded by airsickness on one or more hops. Of the total number of hops flown, airsickness, vomiting, and performance degradation were reported to have occurred on 15.7, 6.2, and 4.4 percent, respectively, of the flights. The report details the flight data by hops and by students and also relates the airsickness performance of the student group to performance on a selected battery of motion reactivity tests administered to a large segment of the squadron population prior to beginning flight training.

MF58.524.004-9022
NAMRL-1268
(AD A089789)

Visual-Vestibular Interactions: II. May 1980
The Directional Component of Visual
Background Movement

Fred E. Guedry, Jr., J. Michael Lentz,
Ralph M. Jell, and Joel W. Norman

Abstract: Legibility of a head-fixed display and visual suppression of the vestibulo-ocular reflex (VOR) were found to be superior when vestibular stimuli and optokinetic stimuli were of like direction (i.e., would produce the same direction of nystagmus) and inferior when they were opposite in direction. Velocities (relating to the head) of peripheral optokinetic stimuli ranging between -18 deg/sec and +180 deg/sec interacted effectively with vestibular stimuli to influence visibility of a head-fixed display. This indicates that peripheral optokinetic stimulation can influence visual suppression of the VOR at velocities that far

surpass effective production of optokinetic nystagmus. Twelve men participated in the main experiment and a total of 22 men participated in two control studies.

NMRDC ZF 51.524.
004.2011
NAVAIRSYSCOM W43-
13.8881
NAMRL-1269
(AD A089790)

The Bias in the Presentation of Stimuli July 1980
When the Up-and-Down Method is Used With
Forced Choice Responding

David J. Blower

Abstract:

The up-and-down method is used in many psychophysical experiments to determine the threshold stimulus. This method attempts to obtain an accurate estimate of the threshold by concentrating stimulus presentations around the threshold. However, if the up-and-down method is used in conjunction with forced responding, the distribution of stimuli presented to a subject will be biased. This results in the disproportionate presentation of stimuli below the threshold and, as a consequence, a bias in the estimate of the threshold calculated from these presentations. This paper sets out to answer the following questions. What is the nature of this bias in stimulus presentation when the up-and-down method is used with four alternative forced choice responding? Can this bias be corrected by modifying the up-and-down method?

The exact nature of the bias induced by forced choice responding in the up-and-down method can be clearly demonstrated. An example is given for a visual acuity threshold problem. The up-and-down method can be analyzed theoretically as a Markov chain and the probability of a particular stimulus being presented can be computed for every trial. The up-and-down method can be modified to force convergence of stimulus presentations around the threshold value, even in the forced choice case.

ZF51.524.004.2011
MR 041.01.03.0154
RR 041.01.02.NR.
201.038
NAMRL-1270
(AD A089749)

Stimulus Determinants of Dynamic Visual August 1980
Acuity I. Background and Exploratory Data

James E. Goodson, and Tommy R. Morrison

Abstract:

The measurement approach represented by tests of dynamic visual acuity (DVA) appears to offer unique potential for assessing visual capabilities which are required in the performance of naval aviation missions, and for investigating the nature of these visual capabilities. The DVA literature reports significant variations in measures of linearity, magnitude, and

continuity of the DVA function. Clarification of the quantitative characteristics of the DVA function is required if measures of this function are to be applied to the assessment and prediction of individual capabilities for visual performance, and if the understanding of this function is to influence task design.

Selected areas in the DVA literature are summarized. Descriptive data are reported from three exploratory experiments regarding individual differences and the effects of contrast, luminance, and target surround upon DVA performance. Subjects, whose static visual acuities were better than 20/20, exhibited large individual differences in their abilities to recognize targets moving at 20°/sec and in the rates at which their acuities were degraded for higher target velocities. Initial data indicate that the configuration of the target surround may affect DVA performance significantly.

MR041.01.03-0156
NAMRL-1271
(AD A090978)

The Vestibulo-Ocular Reflex in Man During July 1980
Voluntary Head Oscillation Under Three
Viewing Conditions

Ralph M. Jell, Fred E. Guedry, Jr., and
W. Carroll Hixson

Abstract:

The vestibulo-ocular reflex (VOR) generated by voluntary head movements keyed to a tone varying sinusoidally in pitch was studied in 13 men. Modulation of pitch at frequencies ranging from 0.1 to 5.0 Hz yielded systematic variation in head movement frequencies, although at higher frequencies head frequencies fell below requested frequencies. Three conditions of visual stimulation were used. When an Earth-fixed visual target was visible, VOR gain $\{(\text{maximum eye velocity}) + (\text{maximum head velocity})\}$ in each half cycle was slightly but significantly greater than VOR gain in darkness at all frequencies except 0.1 Hz. With a head-fixed target, VOR gain was substantially less than VOR gain in darkness at all requested frequencies below 2.0 Hz. The finding that visual suppression becomes ineffective at frequencies above 1.0 Hz parallels results obtained in other laboratories during passive whole-body oscillation. Results indicate that the procedures are feasible for further evaluation as part of a clinical test battery.

Special Reports

Special Report 79-5 Development and Application of Performance Criteria and Aircrew Assessment Methods for the Air Combat Maneuvering Range (ACMR). (U) December 1979
CONFIDENTIAL
REPORT

A. P. Ciavarelli, C. A. Brictson, and P. A. Young

Special Report 79-6 Comparison of Specification for Head-Up Displays in the Navy A-4M, A-7E, AV-8A, and F-14A Aircraft September 1979
(AD A080047)

Lawrence H. Frank

Abstract: The purpose of this report is to provide within a single document, a compendium of data on Head-Up Displays (HUDs), in U. S. Navy and U. S. Marine Corps aircraft that is germane to a Human Factors assessment of HUD design on pilot performance.

The data in this report are compiled from current Naval Air Training and Operating Procedures Standardization (NATOPS) manuals and design specifications for each of the HUD units.

Operational HUDs were found to vary dramatically from each other and the military specification for HUDs MIL-D-81641(AS), with respect to symbology and formatting. Furthermore, display clutter was reported by pilots to be a major problem. A comprehensive information processing evaluation of virtual image symbols and formatting under dynamic conditions was recommended.

Finally, none of the current Navy aircraft has a HUD control panel that complies to MIL-D-81641 (AS), the military specification for HUDs. Pilots are required to bring their eyes back "into" the cockpit to ensure proper switch selection and, consequently, negate the primary purpose of maintaining a head-up mode.

Special Report 80-1 A Comparison of College Background, Pipeline Assignment, and Performance in Aviation Training for Black Student Naval Aviators and White Student Naval Aviators November 1979
(AD A082201)

A. G. Baisden, and R. E. Doll

Abstract: This report represents the third in a series of reports analyzing minority officer accessions and attritions as related to the Naval Air Training Program. Previous reports have shown no differences in attrition rates for black students and white students in pilot training when the two groups are equated on AQT/FAR, procurement source, and class contiguity. Performance, as measured by academic and flight grades, however, was significantly lower for the black students. In this report, three variables, college major, grade point average, and the college's racial composition were analyzed to determine the extent to which they could account for those performance differences. In addition, the two groups were compared by training pipelines.

The college majors of the black students were not significantly different from those of the matched group of white students. Black students with majors in technical, engineering, social science, and physical science had the highest aviation training completion rates, while white students with majors in technical, business administration, physical education, and engineering had the highest completion rates. Grade point average was predictive of pre-advanced academic grades for black students, but had no predictive validity for complete/attrite. The majority of black students attended predominantly white colleges. The AQT was significantly higher for black students who attended white colleges, but attrition rates did not differ. There were no differences in input or attrition rates when the black students and white students were compared by training pipelines.

Special Report 8C-2 A Comparison of College Background, July 1980
(AD 091113) Pipeline Assignment, and Performance
in Aviation Training for Black Student
Naval Flight Officers and White Student
Naval Flight Officers

Annette G. Ralsden

Abstract: This is the fourth and final report in a series of reports analyzing minority officer accessions and attritions in the Naval Air Training Program. Previous reports compared black civilian procured applicants and white civilian procured applicants in terms of aviation selection test performance. In addition, black students in pilot training were compared with a matched sample of white students on training performance variables and college background factors. This

report examines for differences in selection test scores, training grades, complete/attrite data, and college background factors between black students and a matched sample of white students in naval flight officer training.

This report shows that black student naval flight officers performed significantly poorer on most training variables than a matched sample of white student naval flight officers. The overall attrition rate for the total group of black SNFOs was significantly higher than the overall attrition rate for the total group of matched white SNFOs. The category of attrition entitled "Drop on Request" was the predominant category of attrition for both the black student naval flight officers and the white student naval flight officers. Significantly more black students than white students attrited for academic reasons, while significantly more white students than black attrited for reasons of physical disqualifications and not aeronautically adapted.

Statistically significant differences between pipeline assignments of the black SNFOs and pipeline assignments of the white SNFOs were found. However, no statistically significant differences between the black student attrition rates and the white student attrition rates from the various pipelines were found.

An analysis of the black SNFO population in terms of the racial composition of the college attended indicated that the majority of the students attended predominantly white colleges, and that there were no statistically significant differences in attrition rates between black SNFOs from predominantly black colleges and black SNFOs from predominantly white colleges.

Special Report 80-3
(AD A108092)

Statistical Package User's Guide

August 1980

Julie A. Hopson, and George A. Cotsonis

Abstract:

The Statistical Package User's Guide represents an aggregation of a variety of statistical analysis. The types of statistical programs available are: Analysis of Variance, Analysis of Covariance, Multivariate Analysis of Variance, Regression Analysis, Factor Analysis, Descriptive Statistics, and Nonparametric Statistics. The User's Guide provides the following documentation for each program: General Description, Mathematical Model, Operational Procedures, Test Data Statistical Analysis, and Software coding.

V. R. Pruitt, W. F. Moroney, and C. Lau

Abstract: Over the past decade, emphasis has been placed on designing fighter aircraft to energy maneuverability criteria. These criteria have indeed increased fighter performance, but they have also presented analysts and pilots with new tasks in fully utilizing this improved capability. In the development of tactics, the energy maneuverability capability of a potential adversary's aircraft must be compared with the maneuvering capability of one's own aircraft. A major factor which determines the outcome of aerial combat is the pilot's ability to maximize the maneuvering capability of his aircraft. This report describes the development of an integrated analog display (turn rate vs calibrated airspeed) for use as a debriefing aid on the Air Combat Maneuvering Range (ACMR).

The ACMR gathers in-flight data from aircraft while they are engaged in air combat maneuvering. Upon returning from the ACMR, aircrew are presented with 1) a pictorial display of the engagement, and 2) a digital printout of selected encounter parameters (e.g., velocity, "g", altitude of each aircraft, range between aircraft). The display integrates these relevant energy maneuverability data into an analog format, thus providing an immediate comparison of the performance of each aircraft with respect to the maneuvering envelope of that aircraft and that of the opponent. The display also allows the aircrew to recognize very rapidly whether they are gaining or losing energy and the rate of gain or loss. The maneuvering envelopes of the F-14, F-4, A-4, and F-5 aircraft can be displayed in this dynamic format. It is expected that this new format 1) will provide a better means for pilots to determine how well they have maximized the performance of their aircraft, and 2) may serve as an aid in tactics development.

A brief discussion of the nature of energy maneuverability is contained in an Appendix.

It is proposed that the effectiveness of the energy maneuverability (EM) display and the companion instructional video tape should be evaluated. The potential incorporation of the display into other ACMRs/ACMIs and ACM simulators should also be considered.

Monographs

No. 24

The Thousand Aviator Study: 1969- April 1979
1971 Follow-up Program with Distri-
butions and Intercorrelations of
Selected Variables

Neil R. MacIntyre, Albert Oberman, William Harlan,
Robert E. Mitchell, and Ashton Graybiel

Abstract: This report summarizes the status of the Thousand Aviator Study through 1971 and the methodologies used in the 1969-71 evaluations. In addition, the distribution and intercorrelations of 80 variables representative of many of the tests done are reported.

No. 28

A Review of Dynamic Visual Acuity March 1980

Tommy R. Morrison

Abstract: In many everyday situations relative motion exists between human beings and the visual information which they must acquire and resolve in order to perform their tasks successfully. In particular, tasks, such as flying aircraft, driving automobiles and other vehicles, and resolving moving information presented via visual displays, impose a requirement on the human operator to process moving information. Since Dynamic Visual Acuity (DVA) is a critical visual skill involved in performing such visual tasks, the present review was undertaken in order to better understand this visual skill and to provide a basis for continuing research in this area.

Considerable research in the area of DVA has been undertaken since the review published in 1962 by Miller and Ludvig which included DVA research performed prior to 1960. The present review summarizes the DVA literature and findings included in the 1962 review, presents findings of DVA investigations reported between 1960 and 1978, and relates some of the latter findings to the former.

OPEN LITERATURE PUBLICATIONS

- de Lorge, J., The effects of microwaves on animal behavior. In: A. J. Berteaud and B. Servantie (Eds.), Ondes Electromagnetiques et Biologie. Jouy en Josas, France: VRSI, CNRS, pp. 171-176, 1980.
- de Lorge, J. O., and Ezell, C. S., Observing-responses of rats exposed to 1.28-and 5.62-GHz microwaves. Bioelectromagnetics, 1: 183-198, 1980.
- Graybiel, A., and Lackner, J. R., A sudden-stop vestibulovisual test for rapid assessment of motion sickness manifestations. Aviat. Space Environ. Med., 51:21-23, 1980.
- Graybiel, A., Space motion sickness: Skylab revisited. Aviat. Space Environ. Med., 51:814-822, 1980.
- Graybiel, A., and Lackner, J. R., Evaluation of the relationship between motion sickness symptomatology and blood pressure, heart rate, and body temperature. Aviat. Space Environ. Med., 51:211-214, 1980.
- Grissett, J. D., Biological effects of electric and magnetic fields associated with ELF communications systems. Proc. IEEE, 68:98-104, 1980.
- Lackner, J. R., and Graybiel, A., Parabolic flight: Loss of sense of orientation. Science, 206:1105-1108, 1979.
- Lackner, J. R., and Graybiel, A., Some influences of vision on susceptibility to motion sickness. Aviat. Space Environ. Med. 50:1122-1125, 1979.
- Lackner, J. R., and Graybiel, A., Visual and postural motion aftereffects following parabolic flight. Aviat. Space Environ. Med., 51:230-233, 1980.
- Lu, S. T., Lotz, W. G., and Michaelson, S. M., Advances in microwave-induced neuroendocrine effects: the concept of stress. Proc. IEEE, 68:73-77, 1980.
- Moroney, W. F., Pruitt, R., and Lau, C., Utilization of energy maneuverability data in improving in-flight performance and performance in air combat maneuvering. In: Proceedings of the Human Factors Society - 23rd Annual Meeting 1979. Pp. 503-507.
- Olsen, R. G., and Hammer, W. C., Microwave-induced pressure waves in a model of muscle tissue. Bioelectromagnetics, 1:45-54, 1980.
- Olsen, R. G., Griner, T. A., and Prettyman, G. D., Far-field microwave dosimetry in a rhesus monkey model. Bioelectromagnetics, 1:149-160, 180.

Petho, F. C., Collyer, P., and Turner, D., VTX-TX Issues Survey, In: Chief of Naval Air Training Undergraduate Pilot Training Task Analysis and VTX Issues Survey, Volume 1, April 1980.

Petho, F. C., Naval undergraduate jet flight training system: New directions, In: Proceedings of the American Institute of Aeronautics and Astronautics Training and Technology Conference, Washington, D. C., August 18-19, 1980. Orlando, Florida, September 15-16, 1980.

Robertson, R. M., Page, J. C., and Williams, C. E., The prevalence of hearing loss among selected Navy enlisted personnel. Navy Med., 70(10):21-27, 1979.

AUTHOR INDEX

- Baisden, A. G. - 8, 9
 Blower, D. J. - 6
 Brictson, C. A. - 8

 Ciavarelli, A. P. - 8
 Collyer, P. - 14
 Cotsonis, G. A. - 10

 de Lorge, J. O. - 2, 13
 Doll, R. E. - 8

 Ezell, C. S. - 2, 13

 Frank, L. H. - 8

 Goodson, J. E. - 6
 Graybiel, A. - 12, 13
 Greene, J. W. - 1
 Griner, T. A. - 13
 Grissett, J. D. - 13
 Guedry, F. E., Jr. - 4, 5, 7

 Hammer, W. C. - 13
 Harlan, W. - 12
 Hixson, W. C. - 1, 4, 5, 7
 Hoger, N. G. - 3
 Holtzman, G. E. - 4, 5
 Hopson, J. A. - 10

 Jell, R. M. - 5, 7

 Lackner, J. R. - 13
 Lau, C. - 11, 13

 Lentz, J. M. - 4, 5
 Lotz, W. G. - 3, 13
 Lu, S. T. - 13

 MacIntyre, N. R. - 12
 Maxwell, D. W. - 1
 Michaelson, S. M. - 13
 Mitchell, R. E. - 12
 Moroney, W. F. - 11, 13
 Morrison, T. R. - 6, 12
 Mosko, J. D. - 1

 Norman, J. W. - 5

 Oberman, A. - 12
 O'Connell, P. F. - 4, 5
 Olsen, R. G. - 13
 O'Neill, T. P. - 3

 Page, J. C. - 14
 Petho, F. C. - 14
 Prettyman, G. D. - 13
 Pruitt, V. R. - 11, 13

 Robertson, R. M. - 1, 14

 Thomas, G. B. - 3
 Turner, D. - 14

 Williams, C. E. - 1, 3, 14
 Young, P. A. - 8

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER N/A	2. GOVT ACCESSION NO. AD-A117 237	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) Annotated Bibliography of Reports Supplement No. 12		5. TYPE OF REPORT & PERIOD COVERED Annual Supplement, 1 Oct 79 30 Sep 80
		6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) Jewell C. Judson		8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS Naval Aerospace Medical Research Laboratory Naval Air Station, Pensacola, Florida 32508		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS N/A
11. CONTROLLING OFFICE NAME AND ADDRESS Naval Medical Research & Development Command National Naval Medical Center Bethesda, Maryland 20014		12. REPORT DATE 30 September 1980
		13. NUMBER OF PAGES 18
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		15. SECURITY CLASS. (of this report)
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report) Approved for public release; distribution unlimited		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Brainstem auditory; audiometric data; nonionizing electromagnetic irradiation neuroendocrine parameters; deleterious noise effects; serum lipoproteins; airsickness; visual-vestibular interactions; optokinetic nystagmus; Markov chain; vestibulo-ocular reflex; Head-Up Displays; officer accessions; factor analysis; maneuvering capability; methodologies; Dynamic Visual Acuity.		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) Documents published at the Naval Aerospace Medical Research Laboratory (NAMRL) since 1 October 1979 are included in this twelfth annual supplement to the annotated bibliography of reports dated 30 September 1980. With the exception of one CONFIDENTIAL report (Special Report 79-5), all numbered reports have been approved for public release; distribution is unlimited. Requests for reprints of open literature documents should be addressed to the author.		

DD FORM 1473

1 JAN 73

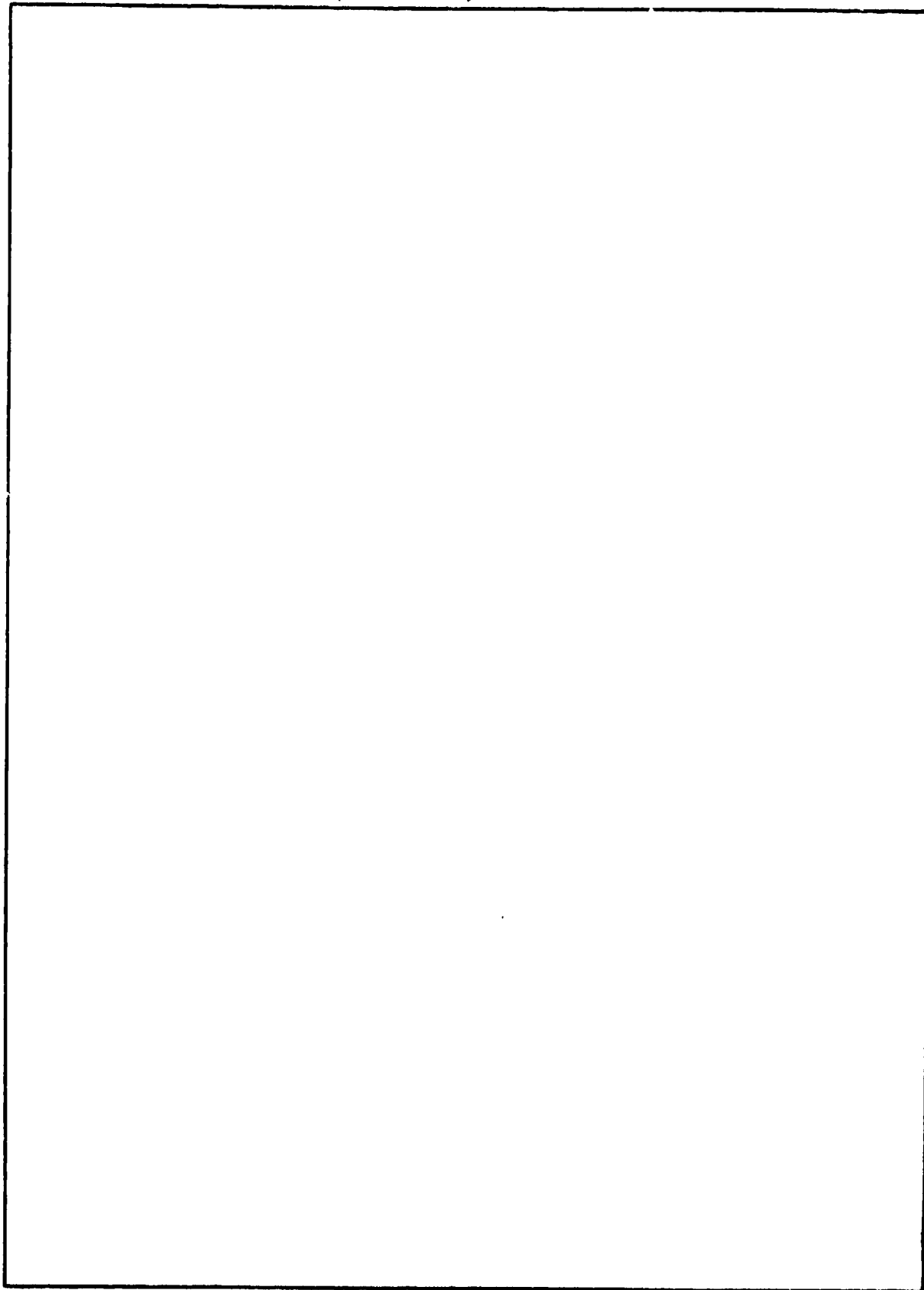
EDITION OF 1 NOV 65 IS OBSOLETE

S N 0102-LF-014-6601

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)



S-N 0102- LF- 014- 6601

SECURITY CLASSIFICATION OF THIS PAGE(When Data Entered)